Central Valley Regional Board Meeting – 10 September 2004

Item 15. Establishment of Total Maximum Daily Loads of Diazinon and Chlorpyrifos in Sacramento Area Urban Creeks

Response to Comments

1. Kerry Schmitz, Senior Civil Engineer
Sacramento County Stormwater Program (on behalf of the Sacramento Area Municipal Stormwater Permittees, which are the County of Sacramento, and the cities of Citrus Heights, Elk Grove, Folsom, Galt, Rancho Cordova, and Sacramento)

Comment 1: The proposed Board resolution captures the essential elements of the TMDL and represents a reasonable and effective regulatory approach to this issue.

Response to Comment 1: The Regional Board appreciates the comment.

Comment 2: WARM and COLD Beneficial Uses Are Dubious
(Reiteration/Expansion of Previous Comment). The Draft TMDL report is based on the assumed continuity of the WARM and COLD Freshwater Habitat beneficial uses from the American and Sacramento Rivers to the urban creeks addressed by the subject TMDL. We maintain that it is questionable whether those beneficial uses are actually achieved in these urban creeks. Therefore, the provisions of the TMDL may be substantially more stringent than necessary to protect the actual beneficial uses of these streams. Furthermore, Section 303(d)(1)A of the Clean Water Act requires listing for those waters that do not meet water quality standards. A standard is conventionally defined as a water quality objective (or criterion) coupled with a beneficial use that the objective is meant to protect. While the listed creeks have been shown to violate certain water quality objectives, impairment of specific beneficial uses due to those violations has not been demonstrated.

Recommendation: As part of the triennial review of the Basin Plan, the Regional Water Quality Control Board should re-evaluate whether the WARM and COLD beneficial uses actually apply to the subject creeks. The Section 303(d) listing should also be reconsidered in light of unknown impairment of beneficial uses. While these are not actionable items under the TMDL, reassessment of the provisions of the TMDL should be undertaken if changes are made in designation of beneficial uses for the creeks.

Response to Comment 2: The Commenter indicates that they recognize that this comment cannot be addressed as part of this action. If any Basin Plan provisions that this TMDL relies upon change, the TMDL would need to be changed to accommodate those new Basin Plan provisions. During the Regional Board's next triennial review process, the Commenter may submit their request for evaluation of WARM and COLD uses in

Sacramento County streams. It is unlikely, however, for the WARM use to be de-designated based on existing information about these creeks and that use would continue to need protection. Further, any aquatic life affected by these chemicals will continue to require protection.

Comment 3: Actions Required by USEPA and CA DPR Should Be Specified (New Comment). The Implementation Plan should specify the relevant actions to be taken by USEPA and the California Department of Pesticide regulation (DPR), as these actions are integral to the overall TMDL implementation strategy and the success of the TMDL. Such actions are listed in the "Diazinon and Pesticide-Related Toxicity in Bay Area Urban Creeks Water Quality Attainment Strategy and Total Maximum Load Final Project Report", produced by the SF Bay Area RWQCB in March 2004 (c.f. Tables 10.4, 10.5). These actions are supportive of the source identification and outreach efforts that are required of local agencies.

Recommendation: Add lists of relevant actions required by CA DPR and USEPA to Implementation Plan for the TMDL (Section 6 of the TMDL report).

Response to Comment 3: As part of the Basin Planning process, the Regional Board can recommend actions to be taken to achieve water quality objectives (California Water Code § 13242 (a)). The San Francisco Bay Regional Board is recommending actions for US EPA and DPR to take as part of a Basin Plan Amendment.

In this case, the Central Valley Regional Board is not considering adoption of a Basin Plan Amendment. The TMDL report merely summarizes actions that have already been taken by the US EPA. It should also be noted that the Regional Board does not have the statutory authority to require actions by US EPA or DPR, as suggested by the Commenter.

Comment 4: Agricultural Sources Vary By Subwatershed. Figures 3-3 and 3-4 were added to the TMDL report to illustrate the geographical distribution of the agricultural uses of diazinon and chlorpyrifos, satisfying a related request by the Permittees. The report text and figure titles should clearly indicate that those figures represent agricultural uses only.

Recommendation: Add the word "agricultural" after the words "average annual" in the text referring to Figures 3-3 and 3-4 on page 23, and in the figure titles.

Response to Comment 4: The suggested changes have been made.

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Comment 5: Annual Pesticide Usage and More Recent Data Are Needed. Table 3.1 was modified in response to our previous comments to reflect annual average usage, and Figures 3-1 and 3-2 were modified to provide more recent annual use data as requested. Table 3-2 should be converted to annual average use as well.

Recommendation: Convert data and title in Table 3-2 to reflect annual average usage, and include recent (post-2000) data to update this analysis.

Response to Comment 5: The suggested changes have been made.

Comment 6: We would still like to see additional documentation of the scientific basis of additive toxicity upon which Equation (2) is based.

Response to Comment 6: The Regional Board's Basin Plan for the Sacramento and San Joaquin River Basins requires the Regional Board to consider the additive toxicity of chemicals with a similar mode of action (see pages IV-17.00, IV-18.00 and IV-35.00). As discussed in the TMDL report (see pages 9 and 10) both diazinon and chlorpyrifos have the same mode of action (acetyl cholinesterase inhibition). The TMDL report includes references that discuss the additive toxicity of diazinon and chlorpyrifos (Bailey, et al, 1997; Siepmann and Finlayson, 2000). The Siepmann and Finlayson document refers to three California Department of Fish and Game studies that confirm the additive toxicity of diazinon and chlorpyrifos.

Comment 7: *Additional note re: our comment #2 above:* Topic: **Retail Pesticide Sales.** While we realize that the RWQCB may not be able to address this issue in the current proposed TMDL, the Permittees also believe that CA DPR could assist local communities in controlling water quality impacts from urban pesticide use by taking additional actions to better address retail sales. DPR should adopt regulations or propose legislation requiring retail outlets to track and report sales of all pesticide products. This information should be made available at least on an aggregate geographic basis to the public, as this type of information is critical to understanding patterns of pesticide use, and to the development of region-specific outreach programs and other pesticide control efforts. Existing mechanisms available to local agencies for estimating retail pesticide sales are not accurate enough for these purposes. Current sales and inventory technology and practices that are in widespread use, such as bar code scanning, should make pesticide reporting very accurate and relatively painless for most retailers. Retail outlets also should be required to have point of sale information on pesticide impacts, alternatives and disposal. These actions, if implemented on a statewide basis, would provide tangible support for the efforts of local agencies to reduce pesticides in urban runoff.

Response to Comment 7: The comment is directed towards potential actions that the Department of Pesticide Regulation could take. The comments cannot be addressed as part of this TMDL action. The comments have been forwarded to DPR.

2. Comments of Mike Shaw, Dow AgroSciences[DAS], LLC and Andy Eimanis, Makhteshim Agan of North America, Inc[MANA].

Comment 1: DAS and MANA agree with core conclusion of the proposed resolution that no new regulatory requirements need be imposed as a result of the potential presence of chlorpyrifos and diazinon in the Sacramento-area urban water bodies.

Response to Comment 1: The Regional Board appreciates the comment.

Comment 2: …DAS and MANA agree that a flow-based calculation of loading capacity is inappropriate, and support this TMDL's direct relationship to the numeric water quality objectives.

Response to Comment 2: The Regional Board appreciates the comment. It should be noted that numeric water quality objectives are not being established, since this is not a Basin Planning action. The diazinon and chlorpyrifos criteria used to determine the loading capacity, load allocations, and waste load allocations are the same criteria identified in the storm water permit to assess the effectiveness of diazinon and chlorpyrifos programs (Waste Discharge Requirements Order No. R5-2002-0206).

Comment 3: [The TMDL] embodies the wrong criteria for both diazinon and chlorpyrifos, and fails properly to consider frequency of detection of exceedences and related statistical issues. … the proper targets are 483 ng/L for diazinon and 102 ng/L for chlorpyrifos. …the misreporting of one of the data points on which the California Department of Fish and Game relied in doing the pertinent calculation, and more recent calculations by USEPA, requires that the diazinon concentration be more than twice the 80 ng/L set forth in the draft resolution. …The methodology employed by the Regional Board also is flawed by virtue of its failure to require and consider the frequency of detection of purported exceedences.

Response to Comment 3: As discussed in the Response to Comment 2, the TMDL incorporates the diazinon and chlorpyrifos criteria identified in the Sacramento area storm water permit. Those criteria are at levels that should result in the attainment of applicable narrative water quality objectives, when the additive toxicity of diazinon and chlorpyrifos are considered.

The levels suggested by MANA and DAS would clearly allow toxic conditions in Sacramento area urban creeks. The levels suggested exceed the LC50 (lethal concentration to 50% of the organisms) of at least 10% of the arthropod species. Such toxic conditions are not consistent with attainment of either the narrative toxicity or narrative pesticide objectives.

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In a recent letter to MANA (11 August 2004), the Regional Board indicated that the information for the *G. fasciatus* study, which was used by Fish and Game and US EPA in criteria development, inconsistently identified the test conditions. If there were no other more recently available information on diazinon toxicity, the recalculated criteria would be 0.160 μg/L (1 hour average) and 0.100 μg/L (4 day average). Since a thorough search for and review of recently available diazinon toxicity information has not been conducted, it is not certain that the criteria would be doubled.

It should also be noted that one of the pesticide objectives requires that "[p]esticide concentrations shall not exceed the lowest levels technically and economically achievable." Based on the phase out of all non-agricultural uses of diazinon, the lowest levels technically and economically achievable should be at or below the levels identified in the Resolution.

The allowable frequency of exceedance is once every three years, which is consistent with how US EPA standards for aquatic life protection are expressed. The Commenters do not provide documentation (or a specific alternative frequency) that would justify a more frequent exceedance of the criteria that would be consistent with the Regional Board's narrative water quality objectives.

Finally, since the MANA and DAS suggested targets are not reflected in the storm water permit, additional Regional Board regulatory action would be required (e.g. a revision of the permit or an amendment to the Basin Plan).

Comment 4: The Registrants agree with the Regional Board that recent changes in diazinon and chlorpyrifos usage are likely to result in far lower measurements of these materials in waters of concern than historically has been the case. Thus, because the impact of those changes is currently taking effect, it is sensible to focus immediate attention on monitoring activities.

Response to Comment 4: The Regional Board appreciates the comment.

Comment 5: The Registrants strongly disagree, however, with the suggestions in the TMDL report that significant amounts of chlorpyrifos or diazinon are reaching urban waterways because of volatilization, rainfall, or other air transport mechanisms.

Response to Comment 5: The TMDL report does not state or suggest that significant amounts of chlorpyrifos or diazinon are reaching urban waterways via air transport mechanisms. The report summarizes the studies that have been done that demonstrate that diazinon and chlorpyrifos are present in the atmosphere. The TMDL report suggests that some of this atmospheric diazinon and chlorpyrifos ends up in urban streams, but the report does not attempt to quantify the contribution from atmospheric transport.

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Comment 6: The assertion at page 9 of the TMDL Report that exposure to diazinon causes a decrease in fish populations contains no substantiating reference and should be revised.

Response to Comment 6: The statement on page 9 states that exposure to diazinon at lower than lethal concentrations causes a decrease in fish populations. The statement is made in the context of a summary of available information on the effects of diazinon and chlorpyrifos. The reference for this statement (Sheipline, 1993) has been added to the TMDL report.